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Razlike u osobinama ličnosti i njihov utjecaj na razvoj i tijek koronarne bolesti srca

Differences in Personality Traits and the Influence of Personality Traits on the Development and Course of Coronary Heart Disease

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SAŽETAK: Prema pet dimenzija ličnosti (neuroticizam, ekstraverzija, otvorenost prema iskustvu, ugodnost i savjesnost), u skladu s Costinom i McCraeovim modelom, i kombinaciji faceta unutar njih, postoji diferencijacija onih osoba koje su sklonije doživljavanju pozitivnih emocija, koje su optimistične te imaju razvijene pozitivne navike ponašanja vezane za zdravlje, što pridonosi njihovu zadovoljstvu životom i osjećaju subjektivne dobrobiti, te onih pojedinaca koji su skloniji doživljavati negativne emocije, koji su pesimistični, posjeduju negativne navike ponašanja vezane za zdravlje te su manje zadovoljni životom i izvješćuju o manjem osjećaju subjektivne dobrobiti. Cilj istraživanja jest ispitati odnos zaštitnih i rizičnih čimbenika ličnosti unutar Costina i McCreova modela, psihosocijalnih varijabli (stanje opće dobrobiti, ponašanja vezana za zdrav život, stupanj percepcije rizika od obolijevanja) i mjera stanja kardiovaskularnoga sustava u zdravih osoba, bolesnika sa stabilnom anginom pektoris te u osoba s čimbenicima rizika za koronarnu bolest srca (KBS). U istraživanju su sudjelovale osobe (N = 248) koje su obavljale kardiološke preglede u Poliklinici za prevenciju kardiovaskularnih bolesti i rehabilitaciju u Zagrebu. Sudionici su podijeljeni u tri skupine: komparabilnu skupinu zdravih i komparabilnu skupinu sudionika oboljelih od stabilne angine pektoris te kliničku skupinu sudionika s čimbenikom rizika za KBS. Sasvim suprotno očekivanjima, pokazalo se da se tri skupine sudionika ne razlikuju prema osobinama ličnosti. Postoji potreba za daljnjim istraživanjem utjecaja zaštitnih i rizičnih čimbenika ličnosti za razvoj KBS-a, metodološkim poboljšanjima uz primjenu osjetljivijih mjera ličnosti, a napose ispitivanja odnosa pozitivnog i negativnog afekta.

SUMMARY: According to the five personality traits (neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness), in accordance with the model by Costa and McCrae and the combinations of facets within them, there is a differentiation of people who are more prone to experiencing positive emotions, are more optimistic, and have developed positive habits related to health, all of which contributes to their life satisfaction and the subjective feeling of wellbeing, and those individuals who are more prone to experiencing negative emotions, are pessimistic, possess negative habits related to health, and are less satisfied with life and report a reduced feeling of subjective wellbeing. The goal of the study was to investigate the relationship of protective and risk personality factors within the model by Costa and McCrae, psychosocial variables (the state of general wellbeing, behaviors related to healthy living, the level of the perception of the risk of developing disease), and the measurement of the state of the cardiovascular system in healthy individuals, patients with stable angina pectoris, and individuals with risk factors for coronary heart disease (CHD). The study participants (N=248) were individuals who were being tested in the Institute for Cardiovascular Prevention and Rehabilitation in Zagreb. The participants were divided into three groups: a control group of healthy people, a control group of participants suffering from stable angina pectoris, and the study group of participants with risk factor for CHD. Contrary to expectations, it was shown that the three groups of participants did not differ according to personality traits. There is need for further research on the influence of protective and risk personality factors for the development of CHD, methodological improvements with the application of more sensitive personality measurements, and especially the relationship of positive and negative affect.

KLJUČNE RIJEČI: koronarna bolest srca, čimbenici rizika, petfaktorski model.

KEYWORDS: coronary heart disease, risk factors, five-factor model

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Uvod

Istraživanja načina na koje psihološki čimbenici mogu djelovati na tjelesno zdravlje pokazuju očitu interakciju fizičkoga i psihičkoga; psihički procesi i ponašanje mogu djelovati na tjelesne funkcije, a tjelesna stanja mogu utjecati na način mišljenja i djelovanja pojedinca[1]. Zdravstvena psihologija i bihevioralna medicina slijede biopsihosocijalni model, prema kojemu su tjelesne bolesti posljedica bioloških, psiholoških i socijalnih poremećaja. Danas je pretpostavka zdravstvene psihologije kako psihološki čimbenici mogu utjecati na gotovo sve bolesti.

Koronarna bolest srca (KBS), odnosno akutni koronarni sindrom (AKS), primarni je uzrok pobola i smrtnosti naše civilizacije te se u razvijenim zemljama smatra direktnim ili indirektnim uzrokom četvrtine svih smrti[2]. KBS je poznat i kao ishemijska bolest srca, degenerativna koronarna bolest i koronarna insuficijencija[3]. Ovi termini opisuju uvjete u kojima dolazi do smanjene prokrvljenosti srčanog mišića te zbog toga do njegove smanjene opskrbljenosti kisikom i hranjivim tvarima. Osoba ovo osjeća kao napadaj angine pektoris.

Najnovija ispitivanja Denellota *i sur.* pokazuju kako su kronični negativni osjećaji, bili oni dio tipa A ponašanja ili ne, najveći rizik za nastanak KBS-a i ostalih tjelesnih bolesti općenito[4-6]. Osobe koje kronično doživljavaju jedan ili više negativnih osjećaja, kao što su depresija, anksioznost, agresivna kompetitivnost, pod većim su rizikom od razvoja KBS-a[7,8], kao i oni koji imaju osjećaj umora, odbačenosti, poraza, socijalne inhibiranosti, povećane razdražljivosti, odnosno u stanju su nazvanom vitalnom iscrpljenošću[9].

Akutni i kronični psihološki distres povezan je s KBS-om, no malo se zna o determinantama distresa kao čimbenika rizika. Moguće je da određene stabilne crte ličnosti mogu objasniti utjecaj distresa na kardiovaskularne (KV) bolesti kao potencijalnoga rizičnog čimbenika. Fokus istraživanja Johana Denolleta[4,10,11] o KV bolesnicima podložnima distresu usmjeren je na negativne osjećaje (tendenciju pojedinca prema doživljavanju negativnih emocija) i socijalnoj inhibiciji (tendencija prema inhibiciji emocija, stajališta i mišljenja u socijalnim interakcijama, kao i izbjegavanja te nepovjerenje prema osobama iz socijalne okoline pojedinca).

Većina istraživana o vezi rizičnih čimbenika ličnosti i učestalosti KBS-a bila je usmjerena na poremećaje u afektu, negativne emocije i socijalnu izolaciju. Depresija i percipirana niska socijalna podrška često se smatraju psihosocijalnim čimbenicima koji su najviše povezani s pobolom i smrtnošću od KBS-a. U osoba bez manifestne bolesti dokazi pokazuju da su mnoge stabilne crte ličnosti glavnina odrednica depresije, psihološkog distresa, stresa, subjektivnog raspoloženja i stabilnosti pojedinca. Individualne razlike u ličnosti i nošenju sa stresnim situacijama isto su tako povezane sa psihološkim distresom u bolesnika s KBS-om.

Uz specifične psihološke čimbenike rizika, postoji potreba za ispitivanjem ličnosti u ranoj identifikaciji onih KV bolesnika u kojih postoji rizik od novih događaja zbog emocionalnoga stresa. Dokazi pokazuju da psihološki čimbenici rizika teže zajedničkom povezivanju u klastere te da njihovo klasteriranje bitno povećava rizik od KV događaja. Stabilne osobine ličnosti mogu imati znatnu predikcijsku vrijednost s obzirom na klasteriranje čimbenika rizika u bolesnika s KBS-om.

Introduction

Studies of the ways psychological factors may affect physical health show an obvious interaction of the physical and the psychological; the psychological processes and behavior may affect physical functions, and physical states may affect an individual's thinking and actions[1]. Health psychology and behavioral medicine follow the biopsychosocial model, according to which physical diseases are a result of biological, psychological, and social disorders. Nowadays, health psychology assumes that psychological factors may affect almost all diseases.

Coronary heart disease (CHD), or acute coronary syndrome (ACS), is the primary cause of morbidity and mortality in our civilization, and in developed countries it is considered a direct or indirect cause of a quarter of all deaths[2]. CHD is also known as ischemic heart disease, degenerative coronary disease, and coronary insufficiency[3]. These terms describe the conditions in which there is reduced blood supply in the heart muscle, which leads to its reduced oxygen and nutrient supply. A person experiences this as an attack of angina pectoris.

The newest study by Denellot *et al* shows that chronic negative feelings, whether they are part of type-A behavior or not, represent the greatest risk for the development of CHD and other physical illnesses in general[4-6]. Individuals who have a chronic experience of one or more negative feelings such as depression, anxiety, or aggressive competitiveness are at greater risk of developing CHD[7-8], as are those who experience the feelings of fatigue, rejection, defeat, social inhibition, or increased irritability, which is a state also known as vital exhaustion[9].

Acute and chronic psychological distress is tied to CHD, but little is known of the determinants of distress as a risk factor. It is possible that certain stable personality traits may explain the influence of distress on cardiovascular (CV) diseases as a potential risk factor. The focus of Johan Denollet's study[4,10,11] on CV patients susceptible to distress is on negative feelings (an individual's tendency towards feeling negative emotions) and social inhibition (tendency towards inhibiting emotions, attitudes, and opinions in social interaction, as well as avoiding and distrusting people from the one's social environment).

Most studies on the link between personality risk factors and the frequency of CHD have been aimed at affect disorders, negative emotions, and social isolation. Depression and perceived low social support are often considered psychosocial factors with strongest ties to morbidity and mortality caused by CHD. In people who do not manifest a disease, evidence suggests that numerous stable personality traits represent the majority of the determinants of depression, psychological distress, stress, subjective mood, and the individual's stability. Individual differences in personality and handling stressful situations are also tied with psychological distress in patients suffering from CHD.

Along with specific psychological risk factors, there is also the need to research personality in an early identification of those CV patients in whom there is risk of new events due to emotional stress. Evidence suggests that psychological stress factors tend towards mutual connection into clusters and that their clustering significantly increases risk of a CV event. Stabile personality traits may have a significant predictive value with regards to clustering risk factors in patients with CHD.

The aim of this study is to research the relationship of protective and risk personality trait factors in the development of

Svrha je ovog istraživanja ispitati odnos zaštitnih i rizičnih čimbenika ličnosti za nastanak KBS-a unutar modela ličnosti prema Costei i McCreau[12,13] i mjera stanja KV sustava u zdravih osoba, onih s čimbenicima rizika za nastanak KBS-a te onih s već dijagnosticiranim KBS-om. Što se tiče osobina ličnosti, valja očekivati da će napose visoki neuroticizam, zatim niski rezultati na dimenzijama ugodnosti, ekstraverzije, otvorenost prema iskustvu te savjesnosti biti izraženi u osoba u kojih postoje somatski čimbenici rizika za razvoj KBS-a te u onih koje boluju od KBS-a (hipoteza 1 – H1), odnosno visoki će neuroticizam i niska ugodnost pokazati značajan doprinos u objašnjenju varijance KBS-a. Treba pretpostaviti da će se po osobinama ličnosti najviše razlikovati skupina zdravih sudionika i onih u kojih je dijagnosticiran KBS na taj način da će zdravi sudionici imati izraženije zaštitne čimbenike u usporedbi s rizičnim čimbenicima nego osobe s već dijagnosticiranim KBS-om (hipoteza 2 – H2).

Ispitanici i metode

Uzorak za ovo ispitivanje prikupljen je tijekom svakodnevnoga kliničkog rada u Poliklinici za prevenciju kardiovaskularnih bolesti i rehabilitaciju u Zagrebu, a u svrhu prikupljanja podataka za specijalističku radnju iz kliničke psihologije. Ispitanici koji su obavljali kardiološke preglede sudjelovali su dragovoljno uz informirani pristanak. Prikupljani su demografski podatci (dob, spol), utvrđena je učestalost čimbenika rizika za KBS, stanje KV sustava (nalaz ergometrijskog testiranja), upitnik općih podataka, upitnik ličnosti NEO PI-R i revidirani NEO-PI-R upitnik[12]. Ispitanici su podijeljeni u tri skupine: oni bez prisutnih čimbenika rizika i bez znakova KBS-a (*skupina Z*), oni s prisutnim čimbenicima KV rizika i dokazanim KBS-om (*skupina K*) te skupina u kojoj je utvrđeno postojanje čimbenika rizika, ali ne i KBS-a (*skupina R*). Kriterij za uključivanje ispitanika u *skupinu Z* bili su sljedeći: čimbenici rizika od KBS-a nisu utvrđeni i dijagnoza KSB-a nije postavljena (uredan nalaz ergometrijskog testiranja i laboratorijskih vrijednosti biokemijskih nalaza krvi prema očekivanim medicinskim kriterijima) i nepostojanje utvrđenih dijagnoza ostalih tjelesnih kroničnih bolesti. Ispitanici uključeni u *skupinu R* selekcionirani su prema sljedećim kriterijima: postojanje čimbenika rizika za KBS (abnormalan rezultat ergometrijskog testiranja i laboratorijskih vrijednosti biokemijskih nalaza krvi koji odstupaju od očekivanih medicinskih kriterija), ali sudionik nema KBS. Sudionici su unutar *skupine R* bili podijeljeni s obzirom na to imaju li jedan dva, tri ili više čimbenika rizika (arterijska hipertenzija, dislipidemija, dijabetes). *Skupinu K* činili su sudionici koji su zadovoljili sljedeće kriterije: postojanje čimbenika rizika za KBS i postavljena dijagnoza KBS-a (stabilna angina pektoris). U svim skupinama zajednički kriterij uključivanja sudionika bilo je nepostojanje dijagnoze psihičke bolesti i raspon dobi od 18 do 65 godina. Mjere zdravstvenog stanja i statusa kardiovaskularnog sustava uključivale su varijable nalaza ergometrije i varijable laboratorijskih vrijednosti biokemijskih nalaza krvi.

Rezultati su analizirani statističkim metodama s pomoću statističkoga programa SPSS 18. Razina statističke značajnosti postavljena je na 0,05.

Rezultati

U istraživanju je sudjelovao 271 sudionik. Od toga je 248 sudionika (148 muškaraca te 100 žena) udovoljilo svim kriterijima

CHD within the personality model by Costa and McCrae[12,13] and the measurement of the condition of the CV system in healthy individuals, those with risk factors for the development of CHD, and those with diagnosed CHD. With regards to personality traits, it is expected that especially high neuroticism, low results on the dimensions of agreeableness, extraversion, openness to experience, and conscientiousness will be pronounced in individuals in whom there are somatic risk factors for the development of CHD and in those suffering from CHD (hypothesis 1 – H1). In other words, high neuroticism and low agreeableness will show a significant contribution to the explanation of the CHD variance. It is to be assumed that, according to personality traits, the greatest difference will be found between the group of healthy participants and those with diagnosed CHD in such a way that healthy participants will have more pronounced protective instead of risk personality factors in comparison with people with diagnosed CHD (hypothesis 2 – H2).

Participants and methods

The sample for this study was assembled during the day-to-day clinical work in the Institute for Cardiovascular Prevention and Rehabilitation in Zagreb for the purposes of gathering data for specialist cooperation in clinical psychology. The participants who undertook cardiologic testing participated voluntarily, with informed consent. The following was used: demographical data (age, sex), the frequency of risk factors for CHD, the state of the CV system (the result of ergometric testing), a questionnaire about general information, the NEO PI-R personality questionnaire and the revised NEO PI-R questionnaire[12]. The participants were divided into three groups: those without risk factors or signs of CHD (*Z group*), those with CV risk factors and diagnosed CHD (*K group*), and those with confirmed CV risk factors, but without diagnosed CHD (*R group*). The criterion for the inclusion of participants in the *Z group* were the following: the risk factors for CHD were not confirmed, CHD was not diagnosed (good results of ergometric testing and laboratory values of biochemical blood tests according to expected medical criteria), and the absence of confirmed diagnoses of other physical chronic diseases. The participants included in the *R group* were selected according to the following criteria: the existence of CHD risk factors (abnormal results of ergometric testing and laboratory values of biochemical blood tests that deviate from the expected medical criteria), but no CHD. The participants in the *R group* were further divided on the basis of having two, three, or more risk factors (arterial hypertension, dyslipidemia, diabetes). The *K group* was constituted of participants who satisfied the following criteria: existence of CHD risk factors and diagnosed CHD (stable angina pectoris). One criterion for the inclusion of participants for all of the groups was the absence of diagnosed psychological illnesses and an age range of 18 to 65. Measurements of the medical condition and the status of the cardiovascular system included the variables of the ergometric finding and variables of laboratory values of biochemical blood test results.

The results were analysed using statistical methods and the statistical program SPSS 18. The level of statistical significance was set at 0.05.

Results

The study included 271 participants. 248 of those participants (148 men and 100 women) satisfied all the criteria and

ma i njihovi su rezultati uključeni u daljnju obradu. U *skupinu Z* bilo je uključeno 50 sudionika (30 muškaraca i 20 žena), u *skupinu K* 86 sudionika (56 muškaraca i 30 žena), dok se *skupina R* sastojala od 112 sudionika (62 muškaraca i 50 žena) (**tablica 1**).

Uzorak ovog istraživanja čine stariji sudionici, što je i očekivano jer je KSB bolest starije populacije (**tablica 2**).

Prosječna životna dob ispitanika, izražena kao aritmetička sredina i standardna devijacija, prikazana je u **tablici 3**. Skupine ispitanika znatno su se razlikovale s obzirom na dob (F = 20,625, df = 2, p = 0,000).

their results were included in further analysis. The *Z group* included 50 participants (30 men and 20 women), the *K group* included 86 participants (56 men and 30 women), and the *R group* was comprised of 112 participants (62 men and 50 women) (**Table 1**).

The sample for this study is made up of older participants, which is to be expected since CHD is a disease of the older population (**Table 2**).

The average age of the participants, expressed as an arithmetic mean, and the standard deviation are shown in **Table 3**. The groups of participants differed significantly with respect to age (F = 20.625, df = 2, p = 0.000).

TABLE 1. Division of participants according to sex and groups.

	K group	R group	Z group	Total
Men	56	62	30	148
Women	30	50	20	100
All participants	86	112	50	248

TABLE 2. Division of participants according to age groups.

	≤35	36-40	41-45	46-50	51-55	56-60	61-65	Total
K group	1	2	5	11	12	29	26	86
R group	6	11	19	25	23	19	9	112
Z group	5	8	8	6	10	9	4	50
All participants	12	21	32	42	45	57	39	248

TABLE 3. The average age of the participants according to groups of patients.

	Arithmetic mean	Standard deviation
K group	55.94	7.04
R group	49.44	8.44
Z group	47.88	9.75
All	51.38	8.91

Kako bismo odgovorili na hipoteze H1 i H2, učinjena je diskriminacijska analiza na 5 faktora ličnosti prema NEO- PI R upitniku ličnosti. Suprotno očekivanjima pokazalo se da se tri skupine sudionika ne razlikuju prema osobinama ličnosti (**tablica 4**). Diskriminacijska analiza koja je uključivala rezultate triju skupina sudionika: zdravih, onih s čimbenikom rizika za razvoj KBS-a i bolesnike sa stabilnom anginom pektoris

In order to answer hypotheses H1 and H2, a discrimination analysis was performed on five personality factors according to the NEO PI-R personality questionnaire. Contrary to expectations, it was shown that the three groups of participants did not differ according to personality traits (**Table 4**). The discrimination analysis, which included the results of three groups of participants (healthy participants, those with

TABLE 4. The results of the discrimination analysis according to the five-factor personality model for the groups of healthy participants, participants with the risk factor for developing CHD, and participants with diagnosed CHD – stable angina pectoris.

Function	Eigenvalues	% explained variances	Canonical correlation coefficient	Wilks' lambda	χ^2	df	p
1	0.42	75.2	0.20	0.95	13.46	10	0.199
2	0.14	24.8	0.12	0.99	3.37	4	0.500

rezultirala je statistički neznačajnom diskriminacijskom analizom uz razinu rizika od 0,05, odnosno, s obzirom na rezultate koje sudionici postižu na pet faktora prema NEO- PI R upitniku ličnosti ne možemo zaključiti kojoj skupini pripadaju (zdravi, sa somatskim čimbenicima rizika za KBS, oboljeli od KBS-a). S obzirom na to da nije pronađena značajna razlika između sudionika prema njihovoj pripadnosti skupini prema petfaktorskom modelu ličnosti, nisu dodatno rađene pojedinačne analize za svaku facetu čimbenika ličnosti. Dakle, pokazalo se kako su po osobinama ličnosti tri skupine sudionika (zdravi, oni u kojih postoji somatski čimbenik rizika za oboljenje od KBS-a) iste.

Diskusija

Kardiovaskularni sustav vrlo je složeno povezan s doživljavanjem emocija, a ove veze mogu objasniti kako i kada dimenzije ličnosti mogu čuvati od razvoja KBS-a ili pak biti čimbenik rizika za razvoj KBS-a. U ovome se istraživanju stoga krenulo s hipotezom da, što se tiče osobina ličnosti, može se očekivati da će napose visoki neuroticizam, zatim niski rezultati na dimenzijama ugodnosti, ekstroverzije, otvorenost prema iskustvu te savjesnosti biti izraženi u osoba u kojih postoje tjelesni čimbenici rizika za razvoj KBS-a te onih koji imaju stabilnu anginu pektoris. Moglo se pretpostaviti da će se prema osobinama ličnosti najviše razlikovati skupina zdravih sudionika i onih u kojih je dijagnosticiran KSB, i to tako da će zdravi sudionici imati izraženije zaštitne čimbenike u odnosu prema rizičnim čimbenicima ličnosti nego sudionici s dijagnosticiranim KSB-om.

Rezultati ovoga istraživanja što se tiče glavnog cilja istraživanja u suprotnosti su s dobivenim, uglavnom konzistentnim nalazima iz pregleda postojeće literature na temu zaštitnih i rizičnih čimbenika ličnosti za razvoj KBS-a[6,9,14]. Statistički neznačajna diskriminacijska analiza pokazala je da, s obzirom na rezultate koje sudionici postižu na pet faktora prema NEO- PI R upitniku ličnosti, ne možemo zaključiti kojoj skupini ovi sudionici pripadaju, odnosno tri se skupine sudionika ne razlikuju prema osobinama ličnosti.

Pogledajmo redom što je moglo dovesti do ovakvih rezultata. Prije svega to su manjkavosti ovoga istraživanja koje se odnose na uzorak. Skupina zdravih sudionika sastoji se od osoba koje su se javljale na kardiološke preglede, a u kojih nije pronađen nijedan čimbenik KV rizika niti ne boluju od KBS-a. Skupinu je činilo 50 ispitanika i to je bila brojčano najmanja skupina. Jedan od razloga iz kojega je bilo toliko teško prikupiti dovoljan broj zdravih sudionika bio je taj što je istraživanje provedeno u kardiološkoj poliklinici. Valja pretpostaviti kako

the risk factor for the development of CHD, and patients with stable angina pectoris), resulted in a statistically insignificant discrimination analysis with the risk level of 0.05. In other words, according to the results shown by participants on the five factors in the NEO PI-R personality questionnaire, it is impossible to conclude which group they belong to (the healthy ones, those with somatic risk factors for CHD, those diagnosed with CHD). Since no significant difference was found between the participants on the basis of the group they belonged to according to the five-factor personality model, there was no additional analysis of each individual facet of personality factors. Therefore, it was shown that, according to personality traits, the three groups of participants (the healthy ones, those with a somatic risk factor for developing CHD) were identical.

Discussion

The cardiovascular system is connected to experiencing emotions in a very complex way, and these connections may explain how and when personality dimensions may protect from the development of CHD or, on the other hand, represent risk factors for the development of CHD. Therefore, this study began with the hypothesis that, with regard to personality traits, it was to be expected that extremely high neuroticism, low results of the dimensions of agreeableness, extraversion, openness to experience, and conscientiousness would be pronounced in individuals with physical risk factors for the development of CHD and in those with stable angina pectoris. It was to be expected that, according to personality traits, the greatest difference would be between the group of healthy participants and those with diagnosed CHD, with the healthy participants having more pronounced protective factors than risk personality factors in comparison with participants with diagnosed CHD.

With respect to the main goal of this study, its results are in contrast with the usually consistent results from the existing literature on the topic of protective and risk personality factors for the development of CHD[6,9,14]. Statistically insignificant discrimination analysis showed that, according to the results for the five factors of the NEO PI-R personality questionnaire shown by the participants, it is impossible to conclude which group these participants belong to.

In other words, the three groups of participants do not differ according to personality traints. Let us examine, in order, what may have led to such results. Firstly, there are the deficiencies of this study with respect to the sample. The group of healthy participants consists of people who attended cardiologic testing, and who did not show any CV risk factors, nor were they diagnosed with CHD. The group was comprised of 50 participants and this was the group with the smallest number of par-

je liječnik obiteljske medicine već unaprijed odradio selekciju osoba koje će uputiti na specijalistički kardiološki pregled te poslao one za koje je pretpostavljao da bi mogli imati znakove KBS-a ili biti pod povećanim rizikom od KBS-a. Ovo je unaprijed utjecalo na selekciju samih osoba koje dolaze na pregled te koje mogu biti potencijalni sudionici istraživanja, što je vjerojatno „kontaminiralo" zdravu skupinu sudionika. Kako bismo poboljšali istraživanje, mogli smo, primjerice, kao skupinu zdravih sudionika izabrati studentsku populaciju. No, to bi, s druge strane, iziskivalo vrlo visoke financijske izdatke za kardiološke preglede kako bismo osigurali mjere zdravstvenoga stanja. Nadalje, tada bismo dobili i značajna velika odstupanja u dobi sudionika istraživanja – studentska bi populacija bila znatno niže dobne skupine od ostalih skupina, a, iako se KBS pojavljuje sve ranije i ranije, ipak je karakterističnija za zrelu dob i stariju populaciju.

U ovome istraživanju rabljen je NEO- PI R upitnik Coste i McCraea[12] te se više od pet dimenzija ličnosti – neuroticizma, ekstroverzije, otvorenosti prema iskustvu, ugodnosti i savjesnosti pokušao zahvatiti konstrukt D-tipa ličnosti, odnosno sklonosti pojedinca doživljavanju negativnih emocionalnih stanja, za razliku od pojedinaca koji kao crtu ličnosti imaju izraženu sklonost doživljavanju pozitivnih stanja.

U području bihevioralne medicine i zdravstvene psihologije postoji niz skala namijenjenih ispitivanju konstrukata kao što je ponašanje koje doprinosi nastanku KBS-a, zdravstvenom lokusu kontrole, percepciju rizika od oboljenja/izlječenja, tip A ponašanja, D-tip ličnosti. Ako se NEO- PI R primjenjuje zajedno s tim skalama, može koristiti za bolje razumijevanje konstrukata zdravstvene psihologije, koji se vrlo često preklapaju. Skale namijenjene mjerenju različitih konstrukata mogu se preklapati te mjeriti iste osobine. Događa se i da ljestvice različitih naziva mjere isti konstrukt, no to, u pravilu, i ne mora biti tako. Korelacija s NEO- PI R skalama daje referentnu točku za ocjenjivanje tih ljestvica. Dodane informacije koje omogućuje NEO- PI R može razjasniti rezultate na ovim, drugim primjenjivanim ljestvicama, što je od posebne važnosti u slučaju mjera percipiranoga zdravlja ili somatskih pritužbi. Primjerice, na somatske pritužbe djeluje mnogo čimbenika, a najvažnije su odrednice objektivni zdravstveni status i neuroticizam[15]. Osobe izvještavaju o zdravstvenim simptomima zbog objektivnih razloga jer doista imaju zdravstvene tegobe koje izazivaju ove simptome, ili zato što su pretjerano zabrinute za svoje zdravlje. Somatske su tegobe vezane za psihološke nevolje te je neuroticizam dobar prediktor tendenciji navođenja somatskih simptoma. Mjerenjem neuroticima može se početi određivati vjerojatnost da su neke somatske pritužbe uistinu indikatori bolesti. No, vjerojatnost da somatske pritužbe upućuju na zdravstveni problem veća je ako osoba ima niske rezultate na neuroticizmu. Konkretno, rezultati na skali neuroticizma trebali bi otkrivati lažno bolesne osobe koje navode somatske tegobe, ali su zapravo zdrave. Tako, primjerice, neuroticizam može zasjeniti dijagnozu KV bolesti. Mogući izvor simptoma angine pektoris u nedostatku objektiviziranog KBS-a značajno je povezan s dimenzijom neuroticizma koji čini široku dimenziju individualnih razlika u tendenciji doživljavanja negativnih emocija, distresa te s njime povezanih tipičnih ponašajnih i kognitivnih obrazaca. Pojedinci koji postižu više rezultate na skali neuroticizma ujedno izvještavaju i o više bolova i nelagode. Neuroticizam se pokazao povezan s povećanim brojem pritužbi na zdravstveno stanje, uključujući bol u prsima i simptome slične angini, no nije se pokazao kao

ticipants. One of the reasons why it was so difficult to find a sufficient number of healthy participants was that the study was performed in a cardiologic polyclinic. It can be assumed that a general practitioner already selected people who should undergo a specialist cardiologic examination and sent those who may have signs of CHD or may be under increased risk of CHD. This affected the selection of people who come for examination and who may be potential study participants, which probably "contaminated" the healthy group of participants. In order to improve the study, we may, for example, choose the student population as the group of healthy participants. On the other hand, this would mean that a significant amount of money would have to be spent on cardiologic examination in order to ensure measurements of the medical condition. Furthermore, this would also contribute to significant age gaps among the study participants – the student population would be significantly younger than other groups, and although CHD is increasingly diagnosed earlier, it is still more characteristic for advanced age and the older population.

This study used the NEO PI-R questionnaire by Costa and McCrae[12], and attempted to encompass the type D personality construct over five personality dimensions – neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness – in other words, the tendencies of an individual towards experiencing negative emotional states in contrast with individuals who have the pronounced personality trait of a tendency towards experiencing positive states.

In the area of behavioral medicine and health psychology, there are a series of scales intended for the examination of constructs such as behavior that contributes to the development of CHD, the health locus of control, the perception of risk of disease/treatment, type A behavior, type D personality. If NEO PI-R is used together with such scales, it may serve to improve the understanding of health psychology constructs, which often overlap. The scales intended for measuring various constructs may overlap and measure the same traits. Sometimes scales of different names measure the same construct, but this is not a rule. The correlation with NEO PI-R scales gives a reference point for the assessment of such scales. The information provided by NEO PI-R may explain the results on the other employed scales, which is of specific importance in the case of measuring perceived health or somatic complaints. For instance, various factors affect somatic complaints, and the most important determinants are the objective health status and neuroticism[15]. Individuals report somatic symptoms due to objective reasons, because they really do have health problems that cause such symptoms, or because they are overly concerned for their health. Somatic difficulties are tied to psychological problems, and neuroticism is a good predictor for the tendency to claim somatic symptoms. By measuring neuroticism, it is possible to determine the probability that certain somatic complaints are actual disease indicators. However, it is more probable that somatic complaints indicate a health problem, and the probability is greater is the individual has low neuroticism results. More specifically, the results of the neuroticism scale should reveal individuals who have no disease and claim to have somatic difficulties, although they are actually healthy. For instance, neuroticism may overshadow the diagnosis of a CV disease. In the absence of objectivized CHD, a possible source of angina pectoris is significantly connected with the dimension of neuroticism, which represents a wide dimension of individual differences in the tendency to experience negative emotions,

uzročno ili etiološki povezan s objektivnim znakovima i patofiziološkim nalazima koji upućuju na bolest, napose na KBS[16]. Slično se dobilo i za konstrukt hostilnosti za koju se pokazala da je povezana s AKS-om, koronarnom smrću i KBS-om. Ali, mjere samog konstrukta srdžbe, koja se čini povezana s hostilnošću, nisu povezane sa srčanom bolešću ili su čak u obrnutom odnosu s težinom te bolesti[17]. Petfaktorski model nastoji prebroditi ovaj paradoks time da ističe postojanje dvaju oblika hostilnosti – ljutita hostilnost koja je dio neuroticizma i antagonistična hostilnost koja je dio ugodnosti. Costa i McCrae pokazuju da je antagonistična hostilnost prediktivna za pojavu bolesti srca te ovo ističe potrebu da se traže novi modeli psihosomatskih bolesti[15]. Nadalje, kao dodatne podatke dobro bi bilo prikupiti, uz samoprocjene, i procjene od bližnjih ili bračnih partnera za svaku domenu ličnosti pa tako i za ugodnost. Ovo je dosta bitno kako bi se razvili psihološki tretmani koji povećavaju ugodnost, odnosno u slučaju da je antagonizam/ugodnost crta koju je teško mijenjati, osobe koje pokazuju ovu crtu ličnosti mogu se uključiti u programe usmjerene na čimbenike koji se mogu lakše mijenjati, kao što su pušenje ili arterijski tlak.

S druge strane, možemo pretpostaviti da se u ovom ispitivanju procjena pozitivnog i negativnog afekta putem petfaktorskog modela pokazala kao preširoka za ispitivanje specifičnih mehanizama koji bi mogli objasniti povezanost između karakteristika ličnosti i emocionalnih stanja. Zbog tog razloga mogle su se rabiti posebno stvorene skale za procjenu pozitivnog i negativnog afekta kao što je PANAS- X[18] ili DS 14[14,19] te neke druge skale preko kojih bismo ispitali, primjerice, stilove suočavanja sa stresnim situacijama, lokus zdravstvene kontrole i slično. Zanimljivo bi bilo i da su te skale primijenjene zajedno s NEO- PI R upitnikom kako bismo dobili bolji uvid u to predviđa li bolje raspoloženje upitnička mjera ili ona u kojoj ispitanik na Likertovoj skali procjenjuje razinu postojanja pojedinog afektivnog stanja opisanog pridjevom ili tzv. pridjevskoj mjera raspoloženja te kakvi su odnosi s obzirom na pripadnost sudionika prema trima skupinama sudionika u ovom istraživanju, prije svega bilo bi vrijedno provjeriti kakvi se rezultati dobivaju u skupini sudionika s rizikom i u onih koji boluju od KBS-a. Nalazi istraživanja pokazuju da pridjevske mjere prema petfaktorskom modelu dodatno, nakon kontrole efekta mjernih dimenzija koje se mjere upitnikom, objašnjavaju dobar dio varijance svih mjera raspoloženja[20]. Također, prema istraživanju Karduma *i sur.*[20], dodatna varijanca koju objašnjavaju upitničke mjere nakon kontrole efekta pridjevskih mjera raspoloženja gotovo je zanemariva.

Istraživanja strukture raspoloženja, koja za osnovu imaju samoprocjene, kao temeljne dimenzije emocionalnih stanja pokazuju dvije: pozitivan afekt i negativni afekt[21]. One čine evaluacijski aspekt emocionalnog iskustva te su u velikoj mjeri nezavisne dimenzije[22]. Pozitivan afekt kreće se u rasponu od niskog uzbuđenja i izostanka ugode do visokog uzbuđenja i visoke ugode. Negativni se afekt pak nalazi u rasponu od niskog uzbuđenja i izostanka neugode do visokog uzbuđenja i visoke neugode. Ove su dvije dimenzije vrlo korisne u praktičnom smislu ispitivanja ličnosti, emocija i u kliničkoj praksi, kao i u teorijskome smislu. Glavna prednost pozitivnog i negativnog afekta jest u tome što pružaju bolji konceptualni okvir za analizu specifičnih emocionalnih stanja predloženih u klasičnim teorijama emocija[23]. Svoje povezanošću s mnogim varijablama omogućuju, primjerice, razlikovanje anksioznih i depresivnih poremećaja[24], i to u situacijama različitih

distress, and distress-related typical behavioral and cognitive patterns. Individuals who score higher on the neuroticism scale also report more frequently about pain and discomfort. Neuroticism has also been shown to be connected with an increased number of complains about the health condition, including chest pain and symptoms similar to angina, but it has not been shown to have a causal or etiological link with objective signs and pathophysiological results that indicate a disease, especially CHD[16]. Similar results were found in the case of the hostility construct, which was shown to be connected with ACS, coronary death, and CHD. However, the measurements of the anger construct itself, which seems connected with hostility, were not related or were actually inversely related with the severity of heart disease[17]. The five-factor model attempts to overcome this paradox by emphasizing the existence of two forms of hostility – angry hostility, which is part of neuroticism, and antagonistic hostility, which is part of agreeableness. Costa and McCrae show that antagonistic hostility is predictive for the onset of heart disease and that this emphasizes the need to find new models for psychosomatic diseases[15]. Furthermore, as additional data and along with self-assessment, it would be wise to also collect assessment by close family members or partners for each personality domain, including agreeableness. This is very important in order to develop psychological treatment that increases agreeableness, or in case antagonism/agreeableness is a trait that is difficult to alter, individuals with this personality trait may be included in programs aimed at factors which are easier to change, such as smoking or arterial pressure.

On the other hand, we may assume that this examination of the evaluation of positive and negative affect using the five-factor model has shown to be too wide for examining specific mechanisms that may explain the connection between personality characteristics and emotional states. Due to this, it is possible to use specially created scales for the evaluation of positive and negative affect such as PANAS-X[18] or DS 14[14,19] and some other scales which may be used to examine, for instance, types of confrontation with stressful situations, the health control locus, etc. It would be interesting if these scales were applied together with the NEO PI-R questionnaire in order to obtain a better insight into whether questionnaire or adjective measures of mood provide a better prediction of mood, and what the relationships are with regards to the participant membership in the three groups in this study, with the examination of the results obtained from the group of participants with risk of developing CHD and those diagnosed with it being of primary importance. The research results show that adjective measures according to the five-factor model, after the control of effects of measure dimensions measured by the questionnaire, explain a fair portion of the variance of all measures of mood[20]. Also, according to the study by Kardum *et al*[20], an additional variance explained by questionnaire measures after the control of effects of adjective measures of mood is almost negligible.

Studies on the structure of mood that are based on self-assessment show two dimensions of emotional states as basic ones: positive affect and negative affect[21]. These constitute the evaluation aspect of emotional experience and are largely independent dimensions[22]. Positive affect ranges from low excitement and absence of discomfort to high excitement and great discomfort. These dimensions are very useful in the practical sense of examining personalities, emotions, and in clinical practice, while also being useful in the theoretical sense. The main advantage of positive and negative affect is that they provide a better conceptual framework for the analysis of specific emotional states suggested

utjecaja okolinskih varijabli. Istraživanja pokazuju i to da su te dvije varijable zapravo subjektivni pokazatelji dvaju biobiheviorističkih sustava[25]. Sama uloga pozitivnog i negativnog afekta u određivanju emocija može se usporediti s dimenzijama petfaktorskoga modela u određivanju ličnosti[26], premda je to određivanje, kao što je već rečeno, kod petfaktorskog modela putem specifičnih faceta ličnosti na svakom od pet velikih faktora otišlo nešto dalje. Detaljniji pokušaj određenja pozitivnog i negativnog afekta daju Watson i Tellegen[21]. Prema njihovu modelu pozitivan i negativan afekt sastoje se od nekoliko međusobno povezanih, no vrlo različitih dimenzija emocija nižeg reda. Kao primarne dimenzije negativnog afekta navode se strah, tuga, krivnja, hostilnost, sram, umor i iznenađenje, dok se za primarne dimenzije pozitivnog afekta navode radost, samopouzdanje, pozornost i smirenost[26].

Na istoj osnovi konstruiran je i DS 14 upitnik[6,19] kojim se mjeri konstrukt D-tipa ličnosti u općoj populaciji te DS 16 upitnik konstruiran posebno za ispitivanje D-tipa ličnosti u populaciji KV bolesnika[27]. Oba se upitnika sastoje se od supskala koje su namijenjene ispitivanju negativnog afekta i socijalne inhibiranosti. Za osobu koja postiže visoke rezultate na objema skalama može se reći da ima D-tip ličnosti. Validacija D-tipa ličnosti s obzirom na petfaktorski model ličnosti pokazuje da je negativan afekt pozitivno koreliran s neuroticizmom, socijalna inhibicija korelira negativno s ekstroverzijom, a i visoka negativna afektivnost i socijalna inhibiranost negativno su povezane sa savjesnošću[19]. Većina se istraživanja o D-tipu ličnosti usmjerila na njegovu prevalenciju i efekte u populaciji pacijenata s različitim KV bolestima kako je konstrukt D-tipa ličnosti prvi put opisan i dalje razvijan upravo u ovoj skupini bolesnika[27]. Ova su istraživanja na KV bolesnicima pokazale da je tip D ličnosti neovisan prediktor negativnih zdravstvenih ishoda kao što su loš zdravstveni status općenito, ponovno pojavljivanje AKS-a te povećani rizik od smrtnosti[28-30]. S obzirom na kliničku relevantnost nalaza istraživanja o D-tipu ličnosti u kontekstu KV poremećaja, važno je razmotriti potencijalnu važnost ovoga konstrukta u općoj populaciji. Kako u ovome istraživanju postoji skupina zdravih sudionika, važno je pogledati što istraživanja govore o učestalosti D-tipa ličnosti i njegovim učincima u zdravoj populaciji.

Iako se za D-tip ličnosti pokazalo kako predviđa prognozu stanja KV sustava nakon što se uzmu u obzir klinički markeri jačine bolesti[30], i dalje postoji mogućnost da ovi pokazatelji jačine bolesti koji nisu kontrolirani mogu dovesti do pojavljivanja karakteristika D-tipa u ovim istraživanjima. Proučavanja D-tipa ličnosti u osoba koje su na prvi pogled zdrave u općoj populaciji omogućilo bi mnogo izravniji test činjenice da D-tip nije samo epifenomen kojega uzrokuju KV bolesti. Štoviše, D-tip ličnosti temelji se na prosječnim crtama ličnosti, umjesto na psihopatološkim obilježjima, što upućuje na to da bi trebao biti prisutan isto tako i u općoj populaciji[19] te da ima suprotni učinak na percipirani zdravstveni status o kojemu izvještavaju pojedinci iz opće populacije.

Različita istraživanja pokazuju da osobe iz opće populacije koje imaju D-tip ličnosti doživljavaju više simptoma distresa, depresivnosti, anksioznosti u usporedbi s osobama koje nemaju D-tip ličnosti[31-34]. Povećana vulnerabilnost od duševnih problema u osoba s D-tipom ličnosti pronađena je i za bolesnike s kroničnim bolnim sindromom[35], dijabetičare[36] i bolesnike s KBS-om[37]. Postojanje D-tipa ličnosti u osoba iz opće populacije isto je tako povezana s lošijim zdravstvenim statu-

in classic theories of emotion[23]. Through its connection with numerous variables, they enable, for instance, the differentiation of anxiety and depression disorders[24] in situations where the surrounding variables are of different influence. Research suggests that these two variables are actually subjective indicators of two behavioral systems[25]. The role of positive and negative affect in the determination of emotions may be compared with the dimensions of the five-factor model in determining personality[26]. However, as we have already mentioned, this determination with the use of the five-factor model through specific facets of personality on each of the five large factors has advanced somewhat. A more detailed attempt to determine positive and negative affect is given by Watson and Tellegen[21]. According to their model, positive and negative affect consist of several interrelated but very different dimensions of low-ranking emotions. According to them, the primary dimensions of negative affect are fear, sadness, guilt, hostility, shame, fatigue, and surprise, while the primary dimensions of positive affect are joy, self-confidence, attention, and calmness[26].

The DS 14 questionnaire was constructed on the same basis[6,19], which is used to measure the type D personality construct in the general population, and the DS 16 questionnaire, constructed specifically for testing the type D personality on the population of CV patients[27]. Both questionnaires consist of subscales intended for examining negative affect and social inhibition. An individual who scores highly on both scales can be said to have type D personality. The validation of type D personality in comparison with the five-factor personality model shows that negative effect is positively correlated with neuroticism, social inhibition correlates negatively with extraversion, and high negative affectivity and social inhibition are negatively correlated with conscientiousness[19]. Most studies on type D personality are aimed at its prevalence and effects in the population of patients with various CV diseases, since the construct of type D personality was first described and further developed in this particular group of patients[27]. These studies on CV patients have shown that type D personality is an independent predictor of negative health outcomes such as bad health status in general, repeated ACS, and increased risk of death[28-30]. Taking into consideration the clinical relevance of test results on type D personality in the context of CV disorders, it is important to examine the potential importance of this construct for the general population. Since this study contains a group of healthy participants, it is important to examine what research shows about the frequency of type D personality and its effects in the healthy population.

Although type D personality has shown to predict the prognosis of the state of the CV system after taking into consideration clinical markers of disease severity[30], the possibility remains that such uncontrolled indicators of disease severity may lead to the onset of characteristics of type D in such studies. Studies of type D personality on individuals from the general population who seem healthy would enable a more direct test of the fact that type D is not merely an epiphenomenon caused by CV diseases. Moreover, type D personality is based on the average personality traits instead of psychopathological markers, which indicates that it should also be present in the general population[19] and that it has the opposite effect on the perceived health status reported by individuals from the general population.

Various studies show that individuals from the general population who have type D personality experience more symptoms of distress, depression, and anxiety in comparison with individuals who do not have type D personality[31-34]. Increased vulnerability to

som. Osobe s D-tipom ličnosti izvještavaju o više somatskih pritužbi[38] i mnogo lošijemu zdravstvenom statusu u usporedbi s osobama koje nemaju D-tip ličnosti[31]. Ovi se nalazi podudaraju s negativnim utjecajem D-tipa ličnosti na somatski zdravstveni status KV bolesnika. U KV bolesnika nađeno je da je D-tip ličnosti nezavisni prediktor lošega zdravstvenog stanja i više kardioloških simptoma[39]. Bolesnici s D-tipom ličnosti 6 puta su pod većim rizikom da će izvijestiti o narušenom zdravstvenom statusu u usporedbi s referentom skupinom osoba koje nemaju D-tip ličnosti[40]. D-tip ličnosti ujedno je i snažan prediktor lošeg ishoda KBS-a te loše prognoze nakon AKS-a, a rizik za lošu prognozu kakav nosi D-tip ličnosti sličan je onome za tradicionalne čimbenike rizika od KBS-a[30].

Zaključak

Statistički neznačajna diskriminacijska analiza pokazala je da, s obzirom na rezultate koje sudionici postižu na pet faktora prema NEO- PI R upitniku ličnosti ne možemo zaključiti kojoj skupini pripadaju (zdravi, s tjelesnim čimbenicima rizika za KBS, oboljeli od KBS-a), što je neočekivano s obzirom na pregled postojećih istraživanja i postavljenom hipotezom ovoga istraživanja. Postoji potreba za daljnjim istraživanjem utjecaja zaštitnih i rizičnih čimbenika ličnosti za razvoj KBS-a, napose odnosa pozitivnog i negativnog afekta koji mogu pomoći u identifikaciji rizičnih skupina, kreiranju i provedbi prije svega preventivnih, ali i rehabilitacijskih programa.

mental problems in individuals with type D personality has also been found in patients with chronic pain syndrome[35], diabetics[36], and patients with CHD.[37] The existence of type D personality in people from the general population is also tied with a poorer health status. Individuals with type D personality report more somatic complaints[38] and a significantly lower health status in comparison with people who do not have type D personality[31]. These findings correspond with the negative influence of type D personality on the somatic health status of CV patients. It has been shown that type D personality is an independent predictor of poorer health status and more cardiologic symptoms in CV patients[39]. Patients with type D personality are under six times more risk of reporting reduced health status in comparison with a reference group of individuals who do not have type D personality[40]. Type D personality is also a strong predictor of a bad outcome of CHD and a bad prognosis after ACS, and the risk of bad prognosis inherent in type D personality is similar to that of the traditional risk factors for CHD[30].

Conclusion

Statistically insignificant discrimination analysis has demonstrated that, given the results of the participants on the five factors according to the NEO PI-R personality questionnaire, we were unable to conclude which group they belong to (those who are healthy, those with physical risk factors for CHD, and those diagnosed with CHD), which is unexpected when we take into account existing studies and the hypothesis of this study. There is a need for further research of the influence of protective and risk personality factors for the development of CHD, especially the relation between positive and negative affect, which may help in the identification of risk groups and the creation and implementation of primarily preventive but also rehabilitation programs.

LITERATURE

1. Nietzel MT, Bernstein DA, Milich R. Uvod u kliničku psihologiju. Jastrebarsko: Naklada Slap; 2001.
2. Lloyd-Jones D, Adams R, Carnethon M, De Simone G, Ferguson TB, Flegal K, et al; American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Heart disease and stroke statistics--2009 update: a report from the American Heart Association Statistics Committee and Stroke Statistics Subcommittee. Circulation. 2009 Jan 27;119(3):e21-181. https://doi.org/10.1161/CIRCULATIONAHA.108.191261
3. Bahn D. Coronary Heart Disease: Prevention, Diagnosis and Therapy. Leverkusen: Medical Department, Bayer AG, Business Group Consumer Care; 1997.
4. Denollet J. Type D personality. A potential risk factor refined. J Psychosom Res. 2000 Oct;49(4):255-66. https://doi.org/10.1016/S0022-3999(00)00177-X
5. Pedersen SS, Lemos PA, van Vooren PR, Liu TK, Daemen J, Erdman RA, et al. Type D personality predicts death or myocardial infarction after bare metal stent or sirolimus-eluting stent implantation: a Rapamycin-Eluting Stent Evaluated at Rotterdam Cardiology Hospital (RESEARCH) registry substudy. J Am Coll Cardiol. 2004 Sep 1;44(5):997-1001. https://doi.org/10.1016/j.jacc.2004.05.064
6. Kupper N, Denollet J, de Geus EJ, Boosoma DI, Willemsen G. Heritability of Type-D Personality. Psychosom Med. 2007 Sep-Oct;69(7):675-81. https://doi.org/10.1097/PSY.0b013e318149f4a7
7. Booth-Kewley S, Friedman HS. Psychological predictors of heart disease: a quantitative review. Psychol Bull. 1987 May;101(3):343-62. https://doi.org/10.1037/0033-2909.101.3.343
8. Sher L. Type D personality: the heart, stress, and cortisol. QJM. 2005 May;98(5):323-9. https://doi.org/10.1093/qjmed/hci064
9. Pedersen SS Middel B. Increased vital exhaustion among type-D patients with ischemic heart disease. J Psychosom Res. 2001 Aug;51(2):443-9. https://doi.org/10.1016/S0022-3999(01)00203-3
10. Denollet J, Van Heck GL. Psychological risk factors in heart disease: What Type D personality is (not) about. J Psychosom Res. 2001 Sep;51(3):465-8. https://doi.org/10.1016/S0022-3999(01)00230-6
11. Denollet J, Conraads VM. Type D personality and vulnerability to adverse outcomes in heart disease. Cleve Clin J Med. 2011 Aug;78 Suppl 1:S13-9. https://doi.org/10.3949/ccjm.78.s1.02
12. Costa PT Jr, McCrae RR. NEO PI-R: Professional Manual. Florida: Psychological Assessment Resources, Inc.;1992.
13. Costa PT Jr, McCrae RR. NEO PI-RTM priručnik. Revidirani NEO inventar ličnosti, NEO petfaktorski inventar ličnosti. Jastrebarsko: Naklada Slap; 2005.
14. Kupper N, Denollet J. Type D personality as a prognostic factor in heart disease: assessment and mediating mechanisms. J Pers Assess. 2007 Dec;89(3):265-76. https://doi.org/10.1080/00223890701629797
15. Costa PT Jr, McCrae RR. Neuroticism, somatic complaints, and disease: Is the bark worse than the bite? J Pers. 1987 Jun;55(2):299-316. https://doi.org/10.1111/j.1467-6494.1987.tb00438.x
16. Costa PT Jr. Influence of the normal personality dimension of neuroticism on chest pain symptoms and coronary artery disease. Am J Cardiol. 1987 Dec 28;60(18):20J-26J. https://doi.org/10.1016/0002-9149(87)90679-5
17. Siegman AW, Dembroski TM, Ringel N. Components of hostility and the severity of coronary artery disease. Psychosom Med. 1987 Mar-Apr;49(2):127-35. https://doi.org/10.1097/00006842-198703000-00003
18. Watson D, Clark LA. The PANAS- X; Manual for the Positive and Negative Affect Schedule – Expanded Form. Iowa: The University of Iowa Press; 1994.

19. Denollet J. DS14: Standard Assessment of Negative Affectivity, Social Inhibition, and Type D Personality. Psychosom Med. 2005 Jan-Feb;67(1):89-97. https://doi.org/10.1097/01.psy.0000149256.81953.49
20. Kardum I, Gračanin A, Krapić N. [Relations Between Dimensions of the Five-Factor Model of Personality and Mood.] Društvena istraživanja. 2007;16;1-2(87-88):135-56. [Croatian]. Available from: https://hrcak.srce.hr/file/29507 (February 10, 2019).
21. Watson D, Tellegen A. Toward a consensual structure of mood. Psychol Bull. 1985 Sep;98(2):219-35. https://doi.org/10.1037/0033-2909.98.2.219
22. Warr P, Barter J, Brownbridge G. On the independence of positive and negative affect. Journal of Personality and Social Psychology. 1983 Mar;44(3):644-51. https://doi.org/10.1037/0022-3514.44.3.644
23. Watson D, Wiese D, Vaidya J, Tellegen A. The two general activation systems of affect: Structural findings, evolutionary considerations, and psychobiological evidence. Journal of Personality and Social Psychology. 1999 May;76(5):820-38. https://doi.org/10.1037/0022-3514.76.5.820
24. Watson D, Clark LA, Carey G. Positive and negative affectivity and their relation to anxiety and depressive disorders. J Abnorm Psychol. 1988 Aug;97(3):346-53. https://doi.org/10.1037/0021-843X.97.3.346
25. Clark LA, Watson D. Temperament: A new paradigm for trait psychology. In: Pervin, LA, John OP, editors. Handbook of personality, New York: Guilford; 1999. p. 399-423.
26. Watson D, Clark LA. On traits and temperament: General and specific factors of emotional experience and their relation to five-factor model. J Pers. 1992 Jun;60(2):441-76. https://doi.org/10.1111/j.1467-6494.1992.tb00980.x
27. Denollet J. Personality and coronary heart disease: the type-D Scale (DS16). Ann Behav Med. 1998 Summer;20(3):209-15. https://doi.org/10.1007/BF02884962
28. Denollet J, Sys SU, Stroobant N, Rombouts H, Gillebert TC, Brutsaert DL. Personality as independent predictor of long-term mortality in patients with coronary heart disease. Lancet. 1996 Feb 17;347(8999):417-21. https://doi.org/10.1016/S0140-6736(96)90007-0
29. Denollet J, Vaes J, Brutsaert D. Inadequate response to treatment in coronary heart disease : adverse effects of type D personality and younger age on 5-year prognosis and quality of life. Circulation. 2000 Aug 8;102(6):630-5. https://doi.org/10.1161/01.CIR.102.6.630
30. Martens EJ, Mols F, Burg MM, Denollet J. Type D personality predicts clinical events after myocardial infarction, above and beyond disease severity and depression. J Clin Psychiatry. 2010 Jun;71(6):778-83. https://doi.org/10.4088/JCP.08m04765blu
31. De Fruyt F, Denollet J. Type D personality: A Five Factor Model perspective. Psychology & Health. 2002;17(5):671-683. https://doi.org/10.1080/08870440290025858
32. Pedersen SS, Yagensky A, Smith OR, Yagenska O, Shpak V, Denollet J. Preliminary Evidence for the Cross-Cultural Utility of the Type D. Personality Construct in the Ukraine. Int J Behav Med. 2009;16(2):108-15. https://doi.org/10.1007/s12529-008-9022-4
33. Williams JE, Paton CC, Siegler IC, Eigenbrodt ML, Nieto FJ, Tyroler HA. Anger proneness predicts coronary heart disease risk: prospective analysis from the Atherosclerosis Risk In Communities (ARIC) study. Circulation. 2000 May 2;101(17):2034-9. https://doi.org/10.1161/01.CIR.101.17.2034
34. Williams L, O'Connor RC, Howard S, Hughes BM, Johnston DW, Hay JL, et al. Type-D personality mechanisms of effect: the role of health-related behavior and social support. J Psychosom Res. 2008 Jan;64(1):63-9. https://doi.org/10.1016/j.jpsychores.2007.06.008
35. Barnett MD, Ledoux T, Garcini LM, Baker J. Type D Personality and chronic pain: Construct and concurrent validity of the DS14. J Clin Psychol Med Settings. 2009 Jun;16(2):194-9. https://doi.org/10.1007/s10880-009-9152-0
36. Simson U, Nawarotzky U, Porck W, Friese G, Schottenfeld-Naor Y, Hahn S, et al. [Depression, anxiety, quality of life and type D pattern among inpatients suffering from diabetic foot syndrome]. Psychother Psychosom Med Psychol. 2008 Feb;58(2):44-50. German. https://doi.org/10.1055/s-2007-971001
37. Spindler H, Kruse C, Zwisler AD, Pedersen SS. Increased anxiety and depression in Danish cardiac patients with a Type D personality: Cross-Validation of the Type D Scale (DS14). Int J Behav Med. 2009;16(2):98-107. https://doi.org/10.1007/s12529-009-9037-5
38. Jellesma FC. Health in young people: social inhibition and negative affect and their relationship with self-reported somatic complaints. J Dev Behav Pediatr. 2008 Apr;29(2):94-100. https://doi.org/10.1097/DBP.0b013e31815f24e1
39. Schiffer AA, Denollet J, Widdershoven JW, Hendriks EH, Smith OR. Failure to consult for symptoms of heart failure in patients with a Type D personality. Heart. 2007 Jul;93(7):814-8. https://doi.org/10.1136/hrt.2006.102822
40. Pelle AJ, Schiffer AA, Smith OR, Widdershoven JW, Denollet J. Inadequate consultation behavior modulates the relationship between Type D personality and impaired health status in chronic heart failure. Int J Cardiol. 2010 Jun 25;142(1):65-71. https://doi.org/10.1016/j.ijcard.2008.12.086